MATHEMATICS CROSSWALK
2008 MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 4

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL				
Strand 1: Number and Operations				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Number Sense	1	Express whole numbers, fractions, decimals, and percents using and connecting multiple representations.	1	Read whole numbers in contextual situations.
			4	State place values for whole numbers (e.g., In the number 203,495 what is the value of the 2?).
			5	Construct models to represent place value concepts for the one's, ten's, hundred's, and thousand's places.
			6	Apply expanded notation to model place value (e.g., 203,495 = 200,000 + 3,000 + 400 + 90 + 5).
			10	Identify symbols, words, or models that represent mixed numbers.
			M05-S1C1-01	Make models that represent improper fractions.
			M05-S1C1-02	Identify symbols, words, or models that represent improper fractions.
			M07-S1C1-01	Express fraction as terminating or repeating decimals.
	2	Compose and decompose whole numbers using factors and multiples.	18	Identify all whole number factors and pairs of factors for a given whole number through 144.
			19	Determine multiples of a given whole number with products through 144.
			M05-S1C1-09	Identify all whole number factors and pairs of factors for a number.
	3	Express fractions as fair sharing, parts of a whole, parts of a set, and locations on a real number line.	9	Make models that represent mixed numbers.
			10	Identify symbols, words, or models that represent mixed numbers.
			11	Use mixed numbers in contextual situations.

* This performance objective is new to the 2008 Mathematics Standard Articulated by Grade Level.

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Strand 1: Number and Operations				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Number Sense	4	Compare and order decimals to hundredths.	12	Compare two unit fractions (e.g., ½ to 1/5) or proper or mixed numbers with like denominators.
			13	Order three or more unit fractions or proper or improper fractions with like denominators.
			15	Compare two decimals.
			16	Order three or more decimals.
			17	Determine the equivalency among decimals, fractions, and percents (e.g., 49/100 = 0.49 = 49%).
			M02-S1C1-19	Compare two decimals using money, through hundredths, using models, illustrations, or symbols.
	5	Use simple ratios to describe problems in context.	11	Use mixed numbers in contextual situations.
			M05-S1C1-03	Use improper fractions in contextual situations.
	M03-S1C1-01	**Moved to Grade 3**	2	Identify whole numbers in or out of order.
	M03-S1C1-01	**Moved to Grade 3**	3	Write whole numbers in or out of order.
	M03-S1C1-02	**Moved to Grade 3**	7	Compare two whole numbers.
	M03-S1C1-02	**Moved to Grade 3**	8	Order three or more whole numbers.
	M04-S1C2-01	**Moved to Strand 1 Concept 2**	14	Use decimals in contextual situations.

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Strand 1: Number and Operations				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
2. Numerical Operations	1	Add and subtract decimals through hundredths including money to $1000.00 and fractions with like denominators.	12	Add or subtract fractions with like denominators, no regrouping.
			M04-S1C1-14	Use decimals in contextual situations.
			M01-S1C2-14	Demonstrate addition of fractions with like denominators (halves) using models.
			M01-S1C2-15	Demonstrate subtraction of fractions with like denominators (halves) using models.
			M02-S1C2-15	Demonstrate addition of fractions with like denominators (halves and fourths) using models.
			M02-S1C2-16	Demonstrate subtraction of fractions with like denominators (halves and fourths) using models.
	2	Use multiple strategies to multiply whole numbers • two-digit by two-digit and • multi-digit by one-digit.	5	Multiply multi-digit numbers by two-digit numbers.
	3	Demonstrate fluency of multiplication and division facts through 12.	6	Divide with one-digit divisors.
			7	State multiplication and division facts through 12s.
	4	Use multiple strategies to divide whole numbers.	6	Divide with one-digit divisors.
	5	Apply associative and distributive properties to solve multiplication and division problems.	8	Demonstrate the associative property of multiplication.
			9	Apply grade-level appropriate properties to assist in computation.
	6	Apply order of operations with whole numbers.	13	Simplify numerical expressions using the order of operations with grade-appropriate operations on number sets.

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		Strand 1: Number and Operations		
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
2. Numerical Operations	M03-S1C2-01	**Moved to Grade 3**	1	Add whole numbers.
	M04-S5C2-03	**Moved to Strand 5 Concept 2**	3	Select the grade-level appropriate operation to solve word problems.
	M04-S5C2-03	**Moved to Strand 5 Concept 2**	4	Solve word problems using grade-level appropriate operations and numbers.
	M05-S1C2-04	**Moved to Grade 5 - raised dot**	10	Apply the symbol: • and ( ) for multiplication, and ≤, ≥.
	M05-S1C2-05	**Moved to Grade 5 - parentheses**	10	Apply the symbol: • and ( ) for multiplication, and ≤, ≥.
	M02-S3C3-02	**Moved to Grade 2 - greater than and less than symbols**	10	Apply the symbol: • and ( ) for multiplication, and ≤, ≥.
		REMOVED (This skill is required throughout the standard).	11	Use grade-level appropriate mathematical terminology.
3. Estimation	1	Use benchmarks as meaningful points of comparison for whole numbers, decimals, and fractions.	3	Estimate length and weight using both U.S. customary and metric units.
			4	Estimate and measure for distance.
	2	Make estimates appropriate to a given situation or computation with whole numbers and fractions.	1	Solve grade-level appropriate problems using estimation.
			2	Use estimation to verify the reasonableness of a calculation (e.g., Is 3284 x 343 = 1200 reasonable?).
			3	Estimate length and weight using both U.S. customary and metric units.
			4	Estimate and measure for distance.

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Strand 2: Data Analysis, Probability, and Discrete Mathematics				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Data Analysis (Statistics)	1	Collect, record, organize, and display data using double bar graphs, single line graphs, or circle graphs.	2	Construct a single-bar graph, line graph or two-set Venn diagram with appropriate labels and title from organized data.
	2	Formulate and answer questions by interpreting and analyzing displays of data, including double bar graphs, single line graphs, or circle graphs.	3	Interpret graphical representations and data displays including single-bar graphs, circle graphs, two-set Venn diagrams, and line graphs that display continuous data.
			4	Answer questions based on graphical representations and data displays including single-bar graphs, circle graphs, two-set Venn diagrams, and line graphs that display continuous data.
			6	Formulate predictions from a given set of data.
			7	Solve contextual problems using graphs, charts, and tables.
	3	Use median, mode, and range to describe the distribution of a given data set.	5	Identify the mode(s) of given data.
	4	Compare two sets of related data.	M05-S2C1-07	Compare two sets of data related to the same investigation.
		REMOVED	1	Formulate questions to collect data in contextual situations.
	M07-S2C3-02	**Moved to Grade 7**	2	Construct a single-bar graph, line graph **or two-set Venn diagram** with appropriate labels and title from organized data.
	M07-S2C3-02	**Moved to Grade 7**	3	Interpret graphical representations and data displays including single-bar graphs, circle graphs, **two-set Venn diagrams**, and line graphs that display continuous data.
	M07-S2C3-02	**Moved to Grade 7**	4	Answer questions based on graphical representations and data displays including single-bar graphs, circle graphs, **two-set Venn diagrams**, and line graphs that display continuous data.

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Strand 2: Data Analysis, Probability, and Discrete Mathematics				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
2. Probability	1	Describe elements of theoretical probability by listing or drawing all possible outcomes of a given event and predicting the outcome using word and number benchmarks.	1	Name the possible outcomes for a probability experiment.
			2	Describe the probability of events as being more likely, less likely, equally likely, unlikely, certain, impossible, fair or unfair.
			M05-S2C2-02	Describe the probability of events as being: - certain (represented by "1"), - impossible, (represented by "0"), or - neither certain nor impossible (represented by a fraction less than 1).
	M05-S2C2-02	**Moved to Grade 5**	3	Predict the outcome of a grade-level appropriate probability experiment.
	M05-S2C2-02	**Moved to Grade 5**	4	Record the data from performing a grade-level appropriate probability experiment.
	M05-S2C2-02	**Moved to Grade 5**	5	Compare the outcome of an experiment to predictions made prior to performing the experiment.
	M05-S2C2-02	**Moved to Grade 5**	6	Make predictions from the results of student-generated experiments using objects (e.g., coins, spinners, number cubes).
	M05-S2C2-02	**Moved to Grade 5**	7	Compare the results of two repetitions of the same grade-level appropriate probability experiment.

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Strand 2: Data Analysis, Probability, and Discrete Mathematics				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
3. Systematic Listing and Counting	1	Construct tree diagrams to solve problems in context by • representing all possibilities for a variety of counting problems, • explaining how its properties relate to the problem, • representing the same counting problem in multiple ways, and • drawing conclusions.	1	Find all possible combinations when one item is selected from each of two sets containing up to three objects (e.g., How many outfits can be made with 3 pants and 2 tee shirts?).
	2	*Justify that all possibilities have been enumerated without duplication.*		
4. Vertex-Edge Graphs	1	*Demonstrate the connection between map coloring and vertex coloring.*		
	2	Construct vertex-edge graphs to represent concrete situations and identify paths and circuits.	M06-S2C4-01	Find the shortest route on a map from one site to another (vertex-edge graph).
	3	Solve conflict problems by constructing and coloring vertex-edge graphs.	1	Color maps with the least number of colors so that no common edges share the same color (increased complexity throughout grade levels).

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Strand 3: Patterns, Algebra, and Functions				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Patterns	1	Recognize, describe, create, extend, and find missing terms in a numerical sequence involving whole numbers using all four basic operations.	1	Communicate a grade-level appropriate iterative pattern, using symbols or numbers.
			2	Extend a grade-level appropriate iterative pattern.
			3	Create grade-level appropriate iterative patterns.
	2	Explain the rule for a given numerical sequence, verify that the rule works, and use the rule to make predictions.	1	Communicate a grade-level appropriate iterative pattern, using symbols or numbers.
2. Functions and Relationships	M02-S3C2-01	**Moved to Grade 2**	1	Describe the rule used in a simple grade-level appropriate function (e.g., T-chart, input/output model).
3. Algebraic Representations	1	Use a symbol to represent an unknown quantity in a simple algebraic expression involving all operations.	2	Use variables in contextual situations.
	2	Create and solve one-step equations that can be solved using addition, subtraction, multiplication, and division of whole numbers.	1	Evaluate expressions involving the four basic operations by substituting given whole numbers for the variable.
			2	Use variables in contextual situations.
			3	Solve one-step equations with one variable represented by a letter or symbol using multiplication of whole numbers (e.g., $12 = n \times 4$).
			M06-S3C3-05	Solve one-step equations with one variable represented by a letter or symbol, using inverse operations with whole numbers.

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MATHEMATICS CROSSWALK
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Strand 3: Patterns, Algebra, and Functions				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
4. Analysis of Change	1	Identify the change in a quantity over time and make simple predictions.	1	Identify the change in a variable over time (e.g., an object gets taller, colder, heavier).
			2	Make simple predictions based on a variable (e.g., increase homework time as you progress through the grades).
			M01-S3C4-01	Identify the change in a variable over time (e.g., an object gets taller, colder, heavier, etc.).
			M01-S3C4-02	Make simple predictions based on a variable (e.g., select next stage of plant growth).
			M02-S3C4-01	Identify the change in a variable over time (e.g., an object gets taller, colder, heavier).
			M02-S3C4-02	Make simple predictions based on a variable (e.g., a child's height from year to year).

Strand 4: Geometry and Measurement				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Geometric Properties	1	Draw and describe the relationships between points, lines, line segments, rays, and angles including parallelism and perpendicularity.	3	Draw points, lines, line segments (open or closed endpoints), rays, or angles.
			M05-S4C1-05	Draw points, lines, line segments, rays, and angles with appropriate labels.
	2	*Justify which objects in a collection match a given geometric description.*		
	3	Describe and classify triangles by angles and sides.	5	Classify triangles as right, acute, or obtuse.
			M05-S4C1-07	Classify triangles as scalene, isosceles, or equilateral.

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CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
Strand 4: Geometry and Measurement				
1. Geometric Properties	4	*Recognize which attributes (such as shape or area) change and which do not change when 2-dimensional figures are cut up or rearranged.*		
	5	Recognize and draw congruent figures, and match them in a given collection.	6	Identify congruent geometric shapes.
			M02-S4C1-02	Recognize congruent shapes.
	6	Draw right, acute, obtuse, and straight angles and identify these angles in other geometric figures.	4	Classify angles (e.g., right, acute, obtuse, straight).
	7	Recognize the relationship between a 3-dimensional figure and its corresponding net(s).	M07-S4C1-03	Identify the net (2-dimensional representation) that corresponds to a rectangular prism, cone, or cylinder.
			M08-S4C1-03	Recognize the 3-dimensional figure represented by a net.
	M02-S4C1-01	**Moved to Grade 2**	1	Identify the properties of 2-dimensional figures using appropriate terminology.
	M03-S4C1-03	**Moved to Grade 3**	2	Identify models or illustrations of prisms, pyramids, cones, cylinders, and spheres.
	M03-S4C1-02	**Moved to Grade 3**	7	Identify similar shapes.
		REMOVED	8	Draw a 2-dimensional shape that has line symmetry.
2. Transformation of Shapes	M03-S4C2-01	**Moved to Grade 3**	1	Demonstrate translation using geometric figures.
		REMOVED	2	Identify a tessellation.

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Strand 4: Geometry and Measurement				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
3. Coordinate Geometry	1	Name, locate, and graph points in the first quadrant of the coordinate plane using ordered pairs.	1	Name the coordinates of a point plotted in the first quadrant.
			M05-S4C3-01	Graph points in the first quadrant on a grid using ordered pairs.
	2	*Plot line segments in the first quadrant of the coordinate plane using a set of ordered pairs in a table.*		
	3	*Construct geometric figures with vertices at points on the coordinate plane.*		
4. Measurement	1	Compute elapsed time to the minute.	2	Compute elapsed time using a clock (e.g., hours and minutes since or until…) or a calendar (e.g., days, weeks, years since or until…).
	2	Apply measurement skills to measure length, mass, and capacity using metric units.	1	Identify the appropriate measure of accuracy for the area of an object (e.g., sq. feet or sq. miles).
			3	Select an appropriate tool to use in a particular measurement situation.
			4	Approximate measurements to the appropriate degree of accuracy.
			5	Compare units of measure to determine *more* or *less* relationships including: • length - yards and miles, meters and kilometers, and • weight - pounds and tons, grams and kilograms.

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\multicolumn{6}{c}{**Strand 4: Geometry and Measurement**}

CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
4. Measurement	3	Solve problems involving conversions within the same measurement system.	6	State equivalent relationships (e.g., 3 teaspoons = 1 tablespoon, 16 cups = 1 gallon, 2000 pounds = 1 ton).
			M05-S4C4-03	Determine relationships including volume (e.g., pints and quarts, milliliters and liters).
			M05-S4C4-04	Convert measurement units to equivalent units within a given system (U.S. customary and metric) (e.g., 12 inches = 1 foot; 10 decimeters = 1 meter).
	4	Solve problems involving perimeter of 2-dimensional figures and area of rectangles.	8	Determine the perimeter of simple polygons (e.g., square, rectangle, triangle).
			9	Determine the area of squares and rectangles.
			10	Differentiate between perimeter and area of quadrilaterals.
	5	Describe the change in perimeter or area when one attribute (length or width) of a rectangle changes.	M05-S4C4-08	Describe the change in perimeter or area when one attribute (length, width) of a rectangle is altered.
	M03-S4C4-01	**Moved to Grade 3 - elapsed time using a calendar**	2	Compute elapsed time using a clock (e.g., hours and minutes since or until…) **or a calendar** (e.g., days, weeks, years since or until…).
	M03-S4C4-02	**Moved to Grade 3 - US Customary units**	5	Compare units of measure to determine *more* or *less* relationships including: • length - **yards and miles**, meters and kilometers, and • weight - **pounds and tons**, grams and kilograms.

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		Strand 5: Structure and Logic		
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Algorithms and Algorithmic Thinking	1	*Analyze common algorithms for computing (adding, subtracting, multiplying, and dividing) with whole numbers using the associative, commutative, and distributive properties. *		
	M05-S5C1-02	**Moved to Grade 5**	2	Develop an algorithm to calculate the perimeter of simple polygons.
	M04-S5C2-02	**Moved to Strand 5 Concept 2**	1	Discriminate necessary information from unnecessary information in a given grade-level appropriate word problem.
2. Logic, Reasoning, Problem Solving, and Proof	1	*Analyze a problem situation to determine the question(s) to be answered. *		
	2	Identify relevant, missing, and extraneous information related to the solution to a problem.	M04-S5C1-01	Discriminate necessary information from unnecessary information in a given grade-level appropriate word problem.
	3	*Select and use one or more strategies to efficiently solve the problem and justify the selection. *	M04-S1C2-03	Select the grade-level appropriate operation to solve word problems.
			M04-S1C2-04	Solve word problems using grade-level appropriate operations and numbers.
	4	*Determine whether a problem to be solved is similar to previously solved problems, and identify possible strategies for solving the problem. *		
	5	*Represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols. *		

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Strand 5: Structure and Logic				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
2. Logic, Reasoning, Problem Solving, and Proof	6	*Summarize mathematical information, explain reasoning, and draw conclusions. *		
	7	*Analyze and evaluate whether a solution is reasonable, is mathematically correct, and answers the question. *		
	8	*Make and test conjectures based on data (or information) collected from explorations and experiments. *		
	M07-S5C2-07	**Moved to Grade 7**	1	Draw a conclusion from a Venn diagram.
	M05-S5C2-09	**Moved to Grade 5**	2	Identify simple valid arguments using *if…then* statements based on graphic organizers (e.g., 2-set Venn diagrams and pictures).

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